REMARKS

Claims 1, 2 and 4 to 33 are all the claims pending in the application, prior to the present Amendment.

The Examiner has set forth two double patenting rejections of the claim over the copending applications that were cited in the Information Disclosure Statement of September 8, 2009.

First, claims 1-22 and 28-33 have been provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1, 2, 3, 7, and 11- 30 of copending Application No. 10/559,615.

Second, claims 1-22 and 28-33 have been are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-44 of copending Application No. 10/490,021.

In response to these doubling patenting rejections, applicants enclose an executed Terminal Disclaimer.

Applicants request withdrawal of the double patenting rejections in view of the filing of the Terminal Disclaimer.

Claims 1-11, 21, 22 and 28-33 have been rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pub. No. 2002/0061445 A1 to Kitagawa et al.

Applicants submit that Kitagawa et al do not disclose or render obvious the subject matter of the present claims and, accordingly, request withdrawal of this rejection.

The present invention as set forth in claim 1 as amended above is directed to a carbon material for a battery electrode, which comprises a carbon powder material as a composite of carbonaceous particles and an a carbon material derived from an organic compound prepared by

allowing the organic compound serving as a polymer source material to deposit onto and/or permeate into the carbonaceous particles to thereby polymerize the polymer material and then heating at 1,800 to 3,300°C, and which has an intensity ratio of 0.1 or more for peak intensity attributed to a (110) plane to peak intensity attributed to a (004) plane determined through X-ray diffraction spectroscopic analysis on a sheet obtained by press-molding a mixture of the carbon material and a binder resin when pressed at 10^3 kg/cm^2 or higher. In the present invention, graphite crystalline structure regions and amorphous structure regions are dispersed from the surface to the center in each of the particles constituting the carbon material. Further, the area ratio of a region including a diffraction pattern having two or more spots to a region including only one spot attributed to a (002) plane is 99 to 30 : 1 to 70 in a 5 μm square region randomly selected from a transmission electron microscope bright field image of a cross-section surface obtained by cutting the carbon material for a battery electrode into flake form.

Thus, applicants have amended claim 1 to incorporate the recitations of claims 10 and 11. In addition, applicants have amended claim 1 to delete the recitations that had previously been incorporated from claim 3.

Applicants submit that Kitagawa et al do not disclose or suggest a carbon powder material wherein graphite crystalline structure regions and amorphous structure regions are dispersed from the surface to the center in each of the particles constituting the carbon material and wherein the area ratio of a region including a diffraction pattern having two or more spots to a region including only one spot attributed to a (002) plane is 99 to 30 : 1 to 70 in a 5 μm square region randomly selected from a transmission electron microscope bright field image of a cross-section surface obtained by cutting the carbon material for a battery electrode into flake form.

Kitagawa et al nowhere mention the presence of amorphous structure regions dispersed from the surface to the center in each of the particles constituting the carbon material and nowhere mention the area ratio of a region including a diffraction pattern having two or more spots to a region including only one spot attributed to a (002) plane is 99 to 30 : 1 to 70 in a 5 μm square region randomly selected from a transmission electron microscope bright field image of a cross-section surface obtained by cutting the carbon material for a battery electrode into flake form. This area ratio defines the physical properties of the final product.

The present invention is clearly different from Kitagawa et al in terms of the final heating treatment temperature after the polymer source material is deposited, and this results in a different final product.

Kitagawa et al disclose a carbonaceous powder of plural-layer structure with a surface layer of carbonaceous matter formed therein, which carbonaceous powder is used as a negative electrode material. Kitagawa et al disclose in paragraph [0012] that the carbonaceous powder of Kitagawa et al is prepared such that, using a lumpy graphite powder as a nucleus, this nucleus or the graphite powder is covered with a carbon precursor, which is then fired in an inert gas atmosphere at a temperature within the range of 700 to 2800°C, thereby causing the surface layer of the carbonaceous matter to form.

Kitagawa et al further explain this firing or heat treatment in paragraph [0043] at page 4, left column, lines 1 to 4, as being a heat treatment in which "the upper limit temperature can be basically raised to a temperature at which the structural order of the carbon precursor does not exceed the crystal structure of the graphite particle nucleus. Therefore, the upper limit temperature of heat treatment is usually 2800°C or less, preferably 2000°C or less, or more preferably 1500°C or less."

Kitagawa et al illustrate the preparation of the carbon powders of their invention which have a plural-layer structure containing a surface layer of carbonaceous matter that has been formed on the surface of its nucleus in Sample Nos. 18 to 34, which are described in paragraph [0083] of Kitagawa et al. As disclosed in Paragraph [0083] of Kitagawa et al, a temperature of 1200°C is employed in the Sample Nos. 18 to 34 of Kitagawa et al, which is similar to the heat treatment of 1000°C employed in Comparative Example 2 of the present specification.

Comparative Example 2 of the present specification obtained a final product that fails to exhibit the properties of the present invention even after the source material is deposited. The difference seems to depend on the ratio of the high crystallinity portions and amorphous portions of the product after the source material is deposited. That is, the ratio of the amorphous portions increases when the heat treatment after depositing the polymer source is carried out at a relatively low temperature as in Comparative Example 2, which results in a ratio out of the range as defined in claim 1 as amended above. Applicants submit that Comparative Example 2 serves as evidence that Kitagawa et al did not achieve the product or results of the present invention, since the temperature of 1200°C employed in the Examples of Kitigawa et al is similar to the temperature of 1000°C employed in Comparative Example 2.

In view of the above, applicants submit that Kitagawa et al do not disclose or render obvious the subject matter of the present claims and, accordingly, request withdrawal of this rejection.

Claims 1, 2, 6-8, 10, 11, 13-20, 22, and 28-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wilde et al (U.S. Pub. No. 2003/0194557 Al).

Applicants submit that Wilde et al do not disclose or render obvious the subject matter of the present claims and, accordingly, request withdrawal of this rejection.

Wilde et al disclose a carbon fiber electrode substrate comprising a paper made from carbon fibers. Wilde et al disclose impregnating this paper with a slurry comprised of carbonaceous particles in a solution or dispersion of binder polymers that form a carbonaceous residue upon heating in an atmosphere devoid of oxygen at a temperature of at least 800°C.

Wilde et al disclose, in paragraph [0063], lines 4 to 8, the step of impregnating the paper with a slurry containing a carbonizable or graphitizable binder and dispersed graphitic particles, and then subsequently heat treating to carbonize or graphitize the binder.

Wilde et al disclose in paragraph [0064], lines 2 to 5, that the particulate carbonaceous material that is employed can be synthetic graphite powder, graphite nanofibers, expanded graphite or mixtures of graphitic carbon particles.

Wilde et al disclose in paragraph [0071], lines 8 to 11, that during the carbonization or graphitization process, the carbonizable or graphitizable binder that surrounds the graphite particles is converted to carbon and a nearly all carbon product is obtained.

The carbon material that is obtained in the present invention is a powder, and not a carbon paper as in Wilde et al. Wilde et al do not disclose or suggest the carbon powder of the present invention, and only disclose a carbon paper. As can be seen from the above, Wilde et al are completely different from the present invention in terms of the structure of the produce and the objectives of the invention.

In view of the above, applicants submit that Wilde et al do not disclose or render obvious the subject matter of the present claims and, accordingly, request withdrawal of this rejection.

Claim 12 has been rejected under 35 U.S.C. 103(a) as being unpatentable over the prior art cited as applied to claim 1 above, and further in view of Yin et al. (The effect of Boron

Doping on Lithium Intercalation Performance of Boron-Doped Carbon Materials; Material of Chemistry and Physics; 80, 94-101; 2003).

It is applicants' understanding that the Examiner is referring to Kitagawa et al when she refers to the prior art as applied to claim 1 above, since she refers to Kitagawa et al in her detailed statement of this rejection.

Since claim 12 depends from claim 1, which possesses unobviousness for the reasons discussed above, applicants submit that the subject matter of claim 12 is not rendered obvious by Kitagawa et al and Yin et al.

In view of the above, applicants request withdrawal of this rejection.

Claims 13-20 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Kitagawa et al. as applied to claim 1 above, and further in view of Morita et al. (U.S. Pub. No. 2003/0044603 A1).

Applicants submit that Kitagawa et al and Morita et al do not disclose or render obvious the subject matter of the present claims and, accordingly, request withdrawal of this rejection.

Since claim 13 depends from claim 1, which possesses unobviousness for the reasons discussed above, applicants submit that the subject matter of claim 13 is not rendered obvious by Kitagawa et al and Morita et al.

In view of the above, applicants submit that Kitagawa et al and Morita et al do not disclose or render obvious the subject matter of claim 13 and, accordingly, request withdrawal of this rejection.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the

Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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